# Neuroendocrinology and Pituitary

## NEUROENDOCRINOLOGY AND PITUITARY

### *Pituitary Metastasis: A Systematic Review*

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Metastatic lesions to the pituitary are uncommon as well as concerning as they do not always have a characteristic radiographic appearance and can be easily missed. We conducted a systematic review of all the published cases and case series of pituitary metastasis to further understand the unique characteristics of these lesions. Using Pubmed and Embase as the primary search engines, we reviewed all cases published from January 1980 to July 2019. A total of 175 unique cases were included in the study. Over 400 cases were collected amongst which a total of 278 cases were included in the study. As part of a challenge with any retrospective study some data points were missing from cases reviewed. Only English language publications were included in the study. The study revealed a predominance of females with 121 cases. Median age was noted to be 61 years. Only 40 patients had previously known metastatic disease. 70 patients were noted have primary cancer arising in the breast which was noted to be the most common primary cancer followed by 64 cases of primary cancer arising from the lungs. Majority of the patients (162 cases) had pituitary hypofunction with deficiency of one or more pituitary hormones. 97 cases were reported to have diabetes insipidus on presentation. Only 40 patients had no visual field deficits whereas 77 patients were reported to have abnormal eye movements. Displacement of the gland superiorly towards optic chiasm was the most common radiographic features in 137 reported cases. Although not commonly reported in most of the published literature, 45 cases were noted to have bony erosion due to expansion of the gland. Only 5 cases were reported to have no contrast enhancement, although many case reports did not specify contrast enhancement of the pituitary. 22 cases were noted to have an aggressive or rapid growth pattern of the pituitary. 13 cases were noted to have edema around the optic chiasm. The pituitary should not be overlooked as a site of metastasis. Many cases can present asymptomatically without biochemical or radiographic characteristics of metastatic lesion. Any biochemical or clinical sign of pituitary pathology in a patient with known cancer should raise suspicion for sellar metastasis. Unique radiographic characteristics should alert the clinicians to consider this possibility. Our study revealed many unique characteristics of metastatic lesions of the pituitary. This should allow clinicians to become aware of the more common findings in these patients allowing prompt diagnosis.

# Bone and Mineral Metabolism

## OSTEOPOROSIS: DIAGNOSIS AND CLINICAL ASPECTS

### *Cortical Porosity Is Associated with Peripheral Small Vessel Disease in Adult Patients with Type 2 Diabetes*

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Patients with Type 2 Diabetes (T2D) are at higher fracture risk despite having relatively normal or even increased BMD by DXA. Increased cortical porosity has emerged as a potential factor contributing to fragility fractures in T2D. However, there is conflicting evidence whether T2D patients have increased cortical porosity. We hypothesized that microvascular complications have an important role in cortical porosity. Thus, we performed high-resolution peripheral quantitative computed tomography imaging at the distal radius and tibia to evaluate bone microarchitecture in men with T2DM age ≥ 50 yrs or postmenopausal women with T2DM and nondiabetic controls. Comprehensive diabetic complications were assessed in all patients including urine microalbuminuria, retinopathy, neuropathy (touch, temperature, and vibration sensation), ankle brachial index (ABI) and transcutaneous oxygen tension (TcPO2). Percent differences between groups were obtained from linear regression models adjusting for age, BMI, and sex. Relationships between variables were assessed using adjusted Spearman correlations. A total of 164 T2D patients (mean age 68.9 ±7.8 yrs.; 56.7% men; HbA1C=7.7 ±0.9%; mean diabetes duration 15.2 yrs.) and 107 nondiabetic controls (mean age 67.3±8.8 yrs.; 42.1% men; HbA1C =5.4 ±0.3%) were recruited to the study. Overall, there was a trend for increased cortical porosity at the distal tibia in the T2D group (+12.2%; $p$=0.063) compared with nondiabetic controls. Of note, TcPO2 was negatively correlated with cortical porosity at the distal radius (r= -0.17; $p$= 0.039) and distal tibia (r= -0.15; $p$= 0.073). In particular, the Low TcPO2 (≤40 mmHg) group (n=29) had greater cortical porosity at the distal tibia (+19.6 %; $p$=0.037) compared with the High TcPO2 (>40 mmHg) group (n=133). In addition, the low TcPO2 group had a significant increase in cortical porosity in the distal tibia (+24.8% $p$=0.020) compared with nondiabetic controls. In conclusion, this is the first evidence in humans indicating that TcPO2, a measure of microvascular blood flow, is linked to cortical porosity in the distal radius and tibia in T2D patients. Our findings may explain the conflicting findings regarding cortical porosity in T2D because only T2D patients with impaired microvascular blood flow have increased cortical porosity. Collectively, our data indicate that cortical porosity is a microvascular complication of longstanding T2D.

# Thyroid

## THYROID DISORDERS CASE REPORTS II

### *Impending Thyroid Storm Induced by Checkpoint Inhibitors*

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